

the axis, and as a forma should be known as *O. vulgatum* f. *ARENARIUM* (E. G. Britton) Clute, *Our Ferns in their Haunts*, 316 (1901). *O. arenarium* E. G. Britton, *Bull. Torr. Club*, xxiv. 555, pl. (1897.) *O. vulgatum* var. *minus* Moore, *Ferns Gt. Brit. and Ireland*, t. 51B3 (1857). *O. vulgatum* var. *microstichum* Moore, *Octavo Nat. Pr. Brit. Ferns*, ii. 336 (1859). *O. microstichum* Acharius (1809), fide Moore l. c. *O. Grayi* Beck, *Bot. N. and Mid. St.* 458 (1833). It is represented from North America in the Gray Herbarium only from New York and New Jersey.

STOUGHTON, MASSACHUSETTS.

*in duplicate
given 27 1913*

NOTES ON THE ALGAE OF GEORGIAN BAY.

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DURING the latter part of August and the first three weeks of September, 1912, I was engaged in an investigation of the Algae of Georgian Bay, Ontario. The work was done in connection with the Biological Station, Go-Home Bay, Muskoka.

From August 17 to 19 was spent at the Station. On August 20th I started on a trip round Georgian Bay in company with Mr. A. D. Robertson in a motor-boat. We carried a tent and camp outfit, and spent from one to four days at the following points:—Waubauskene; Shawanaga, Parry Sound District; French River, Nipissing District; Killarney, Algoma District; Big Burnt Island; Wekwemikongsing Manitoulin; Rattlesnake Harbour, Fitzwilliam Island; Tobermory; MacGregor's Harbour, Bruce Peninsula; and Collingwood. From these points short runs were made each day for collecting.

It will be noticed that the number of species of Chlorophyceae reported is small; this being due to the lateness of the season as most of the Chlorophyceae are vernal plants, and even if they have not completely disappeared by midsummer they are only in a vegetative condition and not recognizable with certainty. The genera *Spirogyra*, *Zygnema*, and *Oedogonium* were present in many collections but none were in fruit.

CYANOPHYCEAE.

Chroococcus turgidus, Naegeli. Among stems of plants in a dried up marsh on the shore of Georgian Bay at Collingwood, Sept. 19.

Gloeocapsa fusco-lutea, Kuetzing. On rocks in Georgian Bay near Rattlesnake Harbour, Fitzwilliam Island, Sept. 8. Sheaths mostly brownish but some reddish, in color. This is the first Canadian record.

Gloeocapsa rupestris, Kuetzing. In a pool in flat limestone rock on the shore at Tobermory, Sept. 9.

Gloeocapsa ambigua, Naegeli. On rocks near Rattlesnake Harbour, Sept. 8. In pool in limestone rock at Tobermory, Sept. 9. This species has not been previously recorded from Canada.

Aphanothece saxicola, Naegeli. On rocks in Georgian Bay near Rattlesnake Harbour, Sept. 8.

Microcystis marginata, Kuetzing. Shawanaga River, Parry Sound, Aug. 26.

Coelosphaerium kuetzingianum, Naegeli. In plankton, Müller's Bay, Go-Home Bay, Aug. 17.

Merismopedium glaucum, Naegeli. In the French River, Aug. 31.

Oscillatoria tenuis, Agardh. In a small stream into the Shawanaga River, Aug. 27. On dead twigs in a little lake off the Shawanaga River, Aug. 27.

Lyngbya aestuarii, Liebmann. In the North River at Waubaushene, Aug. 24.

Lyngbya aerugineo-caerulea, Gomont. Along the banks of the North River at Waubaushene, Aug. 24. This is the first Canadian record for this species.

Nostoc verrucosum, Vaucher. Shore of the Severn River, Muskoka, Aug. 23.

Nostoc commune, Vaucher. Among stems of plants in a dried up marsh on the shore of Georgian Bay at Collingwood, Sept. 19. Recorded previously in Canada only from Davis Strait.

Nostoc pruniforme, Agardh. Shore of the Severn River, Aug. 23. Not previously recorded from Canada.

Anabaena circinalis, Rabenhorst. Plankton, Go-Home Bay, Aug. 17. This is the first Canadian record for this species.

Anabaena catenula, Bornet & Flahault. On dead twigs in a little lake off the Shawanaga River, Aug. 27.

Anabaena sphaerica, Bornet & Flahault. On leaves of *Nymphaea advena* in lake off Shawanaga River, Aug. 27. This species has not been previously recorded from Canada, or from the Eastern or Middle States.

Cylindrospermum minutum, Wood. Marsh, Killarney, Sept. 4. This is the first Canadian record for this species.

Cylindrospermum muscicola, Kuetzing. On leaves of *Nymphaea advena* in a lake off the Shawanaga River, Aug. 27. Not previously recorded from Canada.

Scytonema myochrous, Agardh. On gneiss rocks at water's edge on Station Island, Go-Home Bay, Aug. 17. In pool in flat limestone rock on the shore at Tobermory, Sept. 9.

Tolypothrix tenuis, Kuetzing. On dead twigs in lake off the Shawanaga River, Aug. 27. Floating at the shore of Georgian Bay, Waubaushene, Aug. 24.

Tolypothrix penicillata, Thuret. Forming a coating of little dark brown tufts on gneiss rocks at the water's edge on Station Island, Go-Home Bay, Aug. 19. Occurring as little brownish-black tufts on limestone rocks just beneath the water near Rattlesnake Harbour, Fitzwilliam Island, Sept. 8. Not before recorded from Canada.

Tolypothrix distorta, Kuetzing. Forming a close brownish hairy coating on gneiss rocks at the water's edge on an island near Collin's Inlet, Algoma District, Sept. 3. This is the first Canadian record.

Calothrix adscendens, Bornet & Flahault. On dead shells of *Unio complanatus* in Georgian Bay at Waubaushene, Aug. 21. Not previously recorded from Canada.

Calothrix parictina, Thuret. On limestone rocks in Georgian Bay near Rattlesnake Harbour, Sept. 8.

Rivularia laurentiana, sp. nov. Coloniis ad 5 mm. diam., globosis, subviridibus, pleurumque solitariis, solidis, firmis sed non calce incrustatis. Filamentis ad 750 μ longis, 5-8 μ diam., densis. Trichomatibus 4-7 μ diam., sensim in setas achroas attenuatis. Vaginis spissis et aequis, 1 μ . crassis. Cellulis 2-10 μ longis. Heterocystis 10-12 μ diam., globosis aut ovatis minore extremitate deorsum versa. Gonidiis semper absentibus.

Colonies up to 5 mm. in diameter, spherical, light green, usually solitary, solid, firm but not incrustated with calcium carbonate. Filaments up to 750 μ in length, 5-8 μ in diameter, crowded. Trichomes 4-7 μ in diameter, tapering to a colorless hair. Sheaths close and even, 1 μ thick. Cells 2-10 μ in length. Heterocysts 10-12 μ in diameter, spherical or ovoid with the small end downwards. Gonidia never present.

Common on aquatic plants. On *Vallisneria spiralis*, *Potamogeton heterophyllus* and *Elodea canadensis* at Waubaushene. On submerged leaves of *Eleocharis acicularis* in the Severn River, Muskoka. On *Potamogeton perfoliatus* at Shawanaga, Parry Sound. On *Myriophyllum spicatum* in the French River, Nipissing District. I have found this *Rivularia* before in lakes and streams in the Laurentian region and as it seems characteristic of this region I have named it as above.

CHLOROPHYCEAE.

- Pandorina morum*, Bory. Pool, Shawanaga River, Aug. 27.
Rhaphidium falcatum, Cooke. Pool, Shawanaga River, Aug. 27.
Rhaphidium falcatum aciculare, Hansgirg. Pool, Shawanaga River, Aug. 27.
Nephrocytium agardhianum, Naegeli. Floating at shore, Waubaushene, Aug. 24.
Tetraedron regulare, Kuetzing. Plankton, Waubaushene, Aug. 24.
Scenedesmus bijuga, Wittrock. Plankton, Waubaushene, Aug. 24. French River, Aug. 31.
Scenedesmus obliquus, Kuetzing. Pool, Shawanaga River, Aug. 27.
Scenedesmus quadricauda, Brébisson. Among other Algae on leaf of *Nymphaea advena* in lake off the Shawanaga River, Aug. 27. Waubaushene, Aug. 21. French River, Aug. 31. Fishing Island Cove, Manitoulin, Sept. 7.
Coelastrum microporum, Naegeli. Plankton, near Collin's Inlet, Sept. 3.
Pediastrum boryanum, Meneghini. Plankton, Müllers Bay, Go-Home Bay, Aug. 17. Plankton, Waubaushene, Aug. 24. Fishing Island Cove, Manitoulin, Sept. 7.
Pediastrum tetras, Ralfs. Pool, Shawanaga River, Aug. 27. Marsh, Killarney, Sept. 4.
Ulothrix zonata, Kuetzing. On limestone rocks near Rattlesnake Harbour, Sept. 8. On limestone rocks, Bear's Rump Island, near Tobermory, Sept. 9.
Chaetosphaeridium globosum, Klebahn. On other Algae on leaf of *Nymphaea advena* in lake off Shawanaga River, Aug. 27.
Chaetophora elegans, Agardh. On dead shells of *Unio complanatus* at Waubaushene, Aug. 21.
Chaetophora incrassata, Hazen. Shore of Severn River, Aug. 21.

Gloiococcus mucosus, A. Braun. Shawanaga River, Aug. 27. Fishing Island Cove, Manitoulin, Sept. 7. Stream into Georgian Bay, Collingwood, Sept. 19.

Coleochaete orbicularis, Pringsheim. On leaves of *Potamogeton lucens* in the French River, Aug. 31.

Coleochaete irregularis, Pringsheim. On leaves of *Nymphaea advena* in lake off Shawanaga River, Aug. 27. This is the first record for this species for Canada.

Cladophora fracta, Kuetzing. Fishing Island Cove, Manitoulin, Sept. 7.

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A NORTHEASTERN VARIETY OF *CAREX DEWEYANA*.

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Carex Deweyana Schwein. is one of the most characteristic sedges in open woods and thickets from the Straits of Belle Isle to British Columbia and south in the Canadian zone, so-called, into the northern States. The species is ordinarily an easy one to distinguish at sight on account of the long interval which separates the remote long-bracted lowest spike from the approximate upper ones. This internode of the rhachis between the lowest spike and the lowermost of the upper ones varies in length from 1 to 3 cm.; and the remote terminal cluster of 2 to 6 spikes usually nods in such a way as to suggest the inflorescence of an overgrown *C. trisperma*.

In the Gaspé Peninsula of Quebec, however, *Carex Deweyana* departs in its inflorescence from the typical plant above described and, as found along the Grand Cascapedia, Grand and Ste. Anne des Monts Rivers, has the spikes all approximate or overlapping, the lowermost subtended by a short or nearly obsolete bract. In luxuriant plants the spikes are often 12 mm. long, so that with its overlapping long spikes and often shortened bract the plant very closely simulates the closer-headed form of the western *C. Bolanderi* Olney, a species with which the writer was at first inclined to place it. Subsequent study, however, shows that in its nerveless perigynia and